washingtonpost.com

Copper Lines Regaining Luster

With the Obstacles to Fiber, Phone Companies Are Tapping the Old Infrastructure

By Jonathan Krim
Washington Post Staff Writer
Friday, February 7, 2003; Page E01

For years, replacing the nation's copper telephone wires with fiber-optic cable has offered a promise of digital heaven: quick downloading of full-length movies from the Internet; phone companies offering television programming to compete with cable; two-way, interactive video for online gaming, education and medicine.

But the regional telephone giants also have warned that as long as they are required to lease those fiber networks to competitors, they will be unwilling to spend significant sums to build them.

Now, with the Federal Communications Commission ready to revamp its competition rules in the next two weeks, many telephony experts, financial analysts and some phone company officials say that even if the former Bell telephone companies get the regulatory relief they seek, fiber to people's homes will remain a far-off dream.

Not only does stringing fiber to the home remain enormously expensive, but advances in technology allow significantly faster connection speeds to be squeezed out of the country's 1.5 billion miles of existing copper lines.

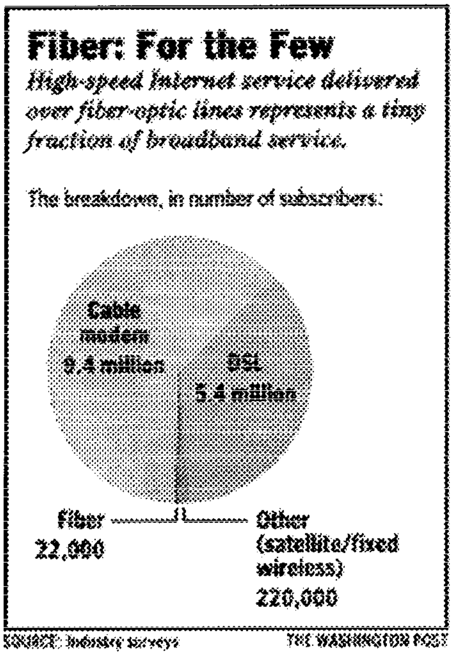
Tests in engineering labs and in a handful of areas around the country are yielding Internet connection speeds five to 50 times as fast as what is now considered "broadband" digital-subscriber-line service offered over phone lines.

"I'm amazed and encouraged with what we can do with our copper network," said William L. Smith, chief technology officer of BellSouth Corp., the regional phone company in the Southeast. "I still want to have fiber to every home and every business, but there's a lot we can do with copper."

Industry giant Verizon Communications Inc., the dominant local phone provider from Maine to Virginia, has run engineering tests in which DSL speeds were increased from a maximum of 1.5 megabits per second to 7 megabits per second, without additional fiber. That would more than enable the video applications that many technology companies say would make broadband more attractive to consumers and jump-start the struggling sector.

Qwest Communications International Inc., which primarily serves the Rocky Mountain region, has for three years served a handful of communities with a full menu of television programming, equivalent to cable packages, over its copper lines using a technology known as VDSL (very-high-data-rate DSL).

"Copper is far from dead," said Steve Starliper, vice president of consumer product management for Qwest, which has 50,000 VDSL customers in Colorado and Arizona.



Although deploying VDSL requires extending fiber lines deeper into neighborhoods, that has cost Qwest far less than it would have had it dug up people's yards or driveways to pull fiber into their houses.

But such advances have drawn little notice in the debate in Washington as the FCC nears decisions on a variety of regulations that will govern telephone and broadband competition.

The former Bells and their supporters continue to press the case that easing their obligations to lease lines to other phone companies would put them on equal footing to compete against cable firms -- and is the key to unlocking investment in a fiber future.

"We cannot expect [the phone companies] to invest in and deploy new facilities when they are required to share such facilities with competitors at below-market prices," said a recent letter to the FCC signed by 22 members of the House of Representatives who support the former Bell companies' position. "While access to broadband services transmitted over copper loops has increased over the past several years, such services pale in comparison to the types of capabilities that consumers could enjoy if fiber accounted for a greater portion of so-called last-mile facilities."

Critics of the former Bells fear that changing the rules would stifle competition for local telephone service and high-speed Internet access, all in the interest of fiber upgrades that the big regional companies have little intention of making.

Some Wall Street analysts say FCC regulations have little to do with why the former Bell companies are not making capital expenditures.

"Myth 1: RBOC [phone company] spending is down because of the current . . . regulatory environment" that discourages investment in upgrading their networks, wrote a team of telecommunications stock analysts at J.P. Morgan Chase & Co.

Instead, like most telecommunications companies, the former Bells binged on spending during the bubble years of the late 1990s, according to the analysts. They added that the companies' targets of spending a collective $19 billion this year is 10 percent less than what they spent in 1995, the year before Congress ordered their networks opened to competition.

Only when the phone companies' core economic picture improves will heavy investment resume, the analysts wrote.

FCC Chairman Michael K. Powell, who recently circulated proposed rules to the other four FCC commissioners, is seeking to ease requirements on the phone companies as part of his broad philosophy that the country needs to migrate to a digital platform.

"The phone companies are sitting on aging infrastructure," Powell said in a recent interview. "Copper wire will end its life."

Sources familiar with Powell's draft proposals say the rules would eliminate leasing obligations for fiber lines built to new residential or commercial developments, where there is no existing telephone service.

Less clear is what the FCC will decide in cases where fiber is driven deeper into neighborhoods before connecting with the copper wires that serve individual homes, or is strung to homes where copper service already exists.

The former Bells want any fiber upgrades to trigger regulatory relief, but sources say the commission is looking at maintaining some leasing obligations based on the extent of the upgrade. Under this scenario, the greater the upgrade to fiber, with corresponding increases in the speed of sending and receiving online transmissions, the lesser the sharing requirements would be.

Many telecommunications experts and industry executives agree that fiber to the home is broadband's Holy Grail, a "future-proof" technology that can offer speeds 100 times as fast as today's DSL and accommodate uses not even currently contemplated.

In the long run, pure fiber networks also are cheaper to operate and maintain than copper or fiber-copper marriages, because fewer switching terminals and other electronics are required. About 22,000 homes have fiber service.

But fiber to the home "is just economically not viable," said John M. Cioffi, a professor of engineering at Stanford University and one of the country's foremost experts on DSL technology. "Even if [the phone companies] had the money, the labor is exhaustive. Realistically, fiber could be a century away."

Cioffi contends that VDSL, a technology that has been around for years, is the only logical alternative. The challenge is to push fiber lines to within 3,000 to 4,000 feet of homes and then hook the copper wires from those houses into the fiber. In this way, Cioffi said, the cost of laying the fiber is shared by many customers. At that distance, speeds of 52 megabits per second are possible, Cioffi said, which is more than adequate for high-end video applications, including high-definition television.

In many cases, the fiber from the carrier's central facility to the neighborhood can be pulled through the same conduits that carry existing phone lines, minimizing additional trenching costs and disruption.

What VDSL provides is what many analysts say is an essential "triple play" of services for the phone companies: telephone, Internet and television programming. Otherwise, analysts say, cable firms -- which already provide Internet and television services -- will add telephone service and leave the former Bells in the dust.

The other regional phone companies have been watching Qwest's VDSL deployment closely but are not sold.

Christopher T. Rice, senior vice president for network planning and engineering at SBC Communications Inc., said his company has decided that pulling fiber all the way to the home is more cost efficient in the long run. But he said extensive stringing of fiber is at least 10 years away.

The former Bells say that any expansion of broadband capability is expensive and will be made based on cold calculations of demand for faster service and how quickly the investment will pay off.

In this challenging economic environment, they argue, every cost, including requirements to lease networks to competitors, must be factored in. They add that in places where their network facilities are so old that they need to be replaced, they are investing to make them capable of handling fiber.

Phone executives point out that even if they could flip a switch today and offer higher speeds to current DSL users, they would have to increase the cost to subscribers to cover the expense of using larger portions of the Internet "backbone," the central pipes that crisscross the country.

And consumers have yet to demonstrate a strong desire for higher speeds. Residential DSL and equivalent service provided over cable television lines rarely provide speeds over 1 megabit per second. And while such service is gaining traction with consumers, at $40 to $50 per month, only 13 percent of households have it.

"We're really focused on our existing DSL products to meet what customers are looking for now," said Peter Castleton, executive director of broadband products for Verizon.

Qwest offers its residential VDSL customers only two speeds, neither of which exceeds what is possible on DSL. Company officials said they are evaluating whether to extend VDSL to more neighborhoods.

Even Grande Communications in Texas, one of a handful of small companies that have strung fiber to residential areas, offers customers a top speed of 2.5 megabits per second, with slower speeds at lower prices.

State regulators, who set certain rules and rates and who oppose changes to the FCC's rules, worry that the former Bells are executing a well-honed strategy: Promise dazzling broadband networks in exchange for regulatory relief, then pull back.

In Pennsylvania, Bell Atlantic, which later became Verizon, promised state regulators in 1994 that over a 20-year period, it would deliver a broadband network capable of speeds of 45 megabits per second, according to public filings.

State public service commission officials say the company has deployed roughly 22 percent of what should be in operation. The commission is considering sanctions against the company.

In California, public service commissioner Loretta Lynch said that SBC and its predecessor, Pacific Bell, did little to deploy high-speed networks, even when they were economically flush.

The regional phone companies have been careful not to make promises. And some technology companies, desperate for broadband deployment to spur new spending and growth, say they understand the Bells' history with regulators.

Any telecommunications investment now is inherently risky, and the government needs to eliminate barriers to help make it more attractive, they say.

"Our support for this is not based on commitments," said Peter K. Pitsch, a lobbyist for Intel Corp. and an organizer of a coalition of technology companies urging the FCC to make changes -- though not to go as far as the former Bells would like. "It's based on the belief that they are more likely to do it if it's more attractive. . . . And in the longer term, they are going to want to do it. And have to do it."